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Installation Instructions
Electrical trace heating systems

Promass 100, 200, 300, 500, 500-digital,
LNGmass, CNGmass, LPGmass

Endress+Hauser
People for Process Automation

Electrical trace heating systems

Promass 100, 200, 300, 500, 500-digital, LNGmass, CNGmass, LPGmass

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1 Symbols used

1.1 Symbols for trace heating systems

Symbol	Meaning
	**Single-core heating cable**
	**Parallel heating cable**

1.2 Symbols for certain types of information

Symbol	Meaning
	**Permitted** Procedures, processes or actions that are permitted.
	**Forbidden** Procedures, processes or actions that are forbidden.
	**Tip** Indicates additional information.
1., 2., 3...	Series of steps

2 Purpose and application

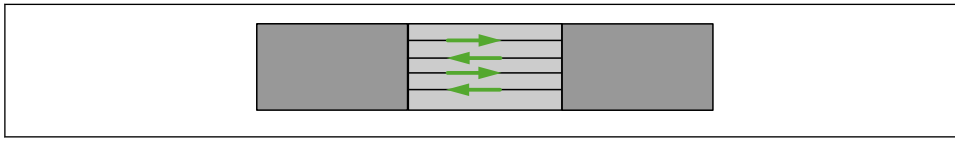
If electrical trace heating systems are not installed correctly, this can affect the measurement results of Promass flowmeters. This document provides an overview of how electrical trace heating systems should be installed and what constraints must be observed. The installation constraints are based on the influence of the electromagnetic field that is generated by the trace heating systems. Other limitations, e.g. from the maximum permitted transmitter temperature, continue to apply.

3 Types of electrical trace heating systems

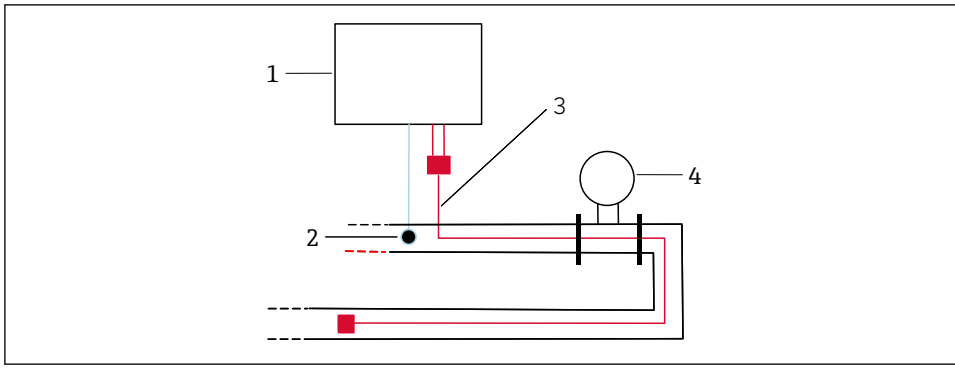
Two different types of trace heating systems are described in this document.

3.1 Parallel heating cable

This type of cable contains several parallel cores. The flow of current alternates in the cores. Only one end is connected to a control box.



1 Example of parallel heating cable. The green arrows show the direction of current flow.

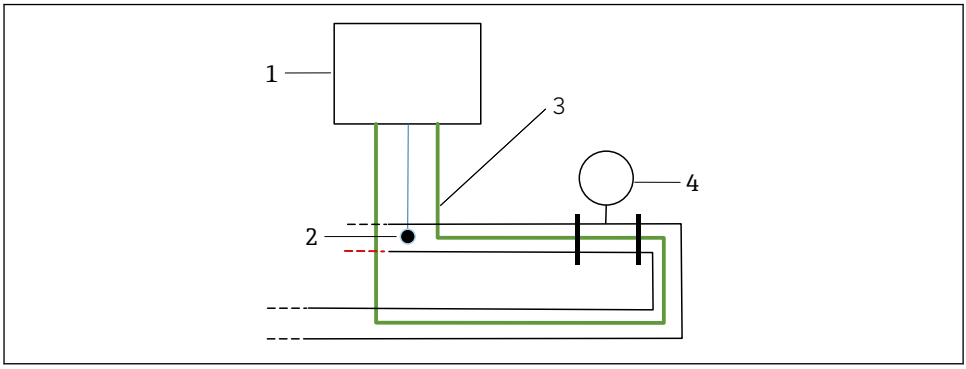


2 Installation example for parallel heating cable

1 = Heating control box
2 = Temperature probe
3 = Trace heating
4 = Measuring device

3.2 Single-core heating cable

This type of heating cable consists of a single core. Current flows in one direction only. Both ends of the heating cable are connected to the control box.

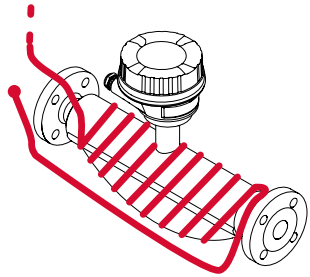
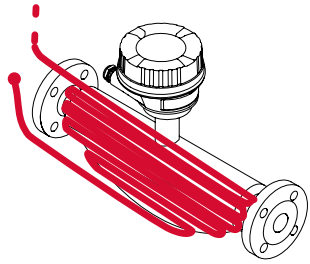
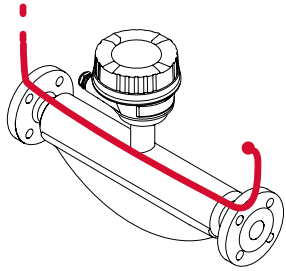


3 Installation example for single-core heating cable

1 = Heating control box
2 = Temperature probe
3 = Trace heating
4 = Measuring device

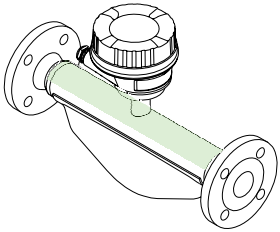
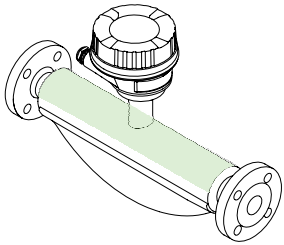
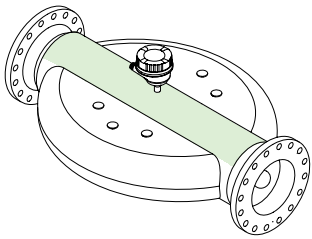
4 Overview of the installation of trace heating systems

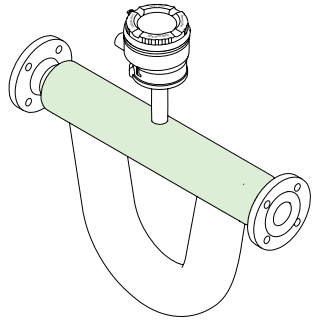
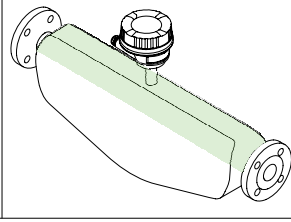
4.1 Recommended wiring layouts for parallel heating cables

Trace heating system Parallel heating cable for bidirectional flow	**Installation set-up** The parallel heating cable can be positioned at any point on the sensor housing.	**Promass E, F, G, O, Q, X, LNGmass CNGmass LPGmass**	**A**	**I**	**C**	**H P S**
		✓	✓	✓	✓	✓
		✓	✓	✓	✓	✓
		✓	✓	✓	✓	✓

4.2 Recommended areas on the sensor to fit single-core heating cables

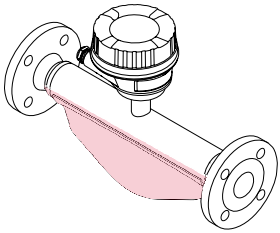
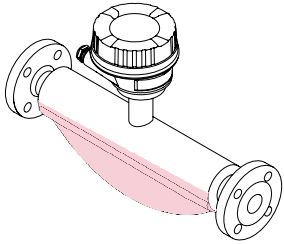
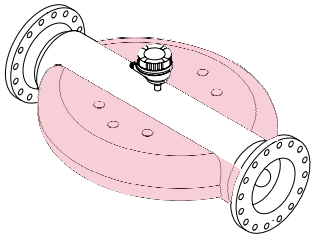
Heat transfer from the heating cable to the medium is optimum in the areas marked green.

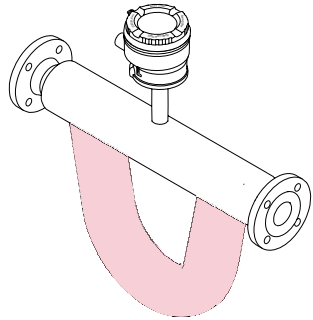
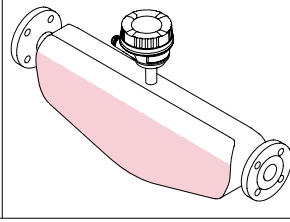
Trace heating system Single-core heating cable	**Installation set-up** The areas in which heating cables may be installed are shaded green. The blue line indicates a weld seam.	**Promass** **E, F, G** **O, Q, X,** **LNGmass** **CNGmass** **LPGmass**	**A**	**I**	**C**	**H** **P** **S**
		✓	✗	✗	✗	✓
		✓	✗	✗	✗	✓
		✓	✗	✗	✗	✓

		✓	✗	✗	✗	✓
		✓	✗	✗	✗	✓

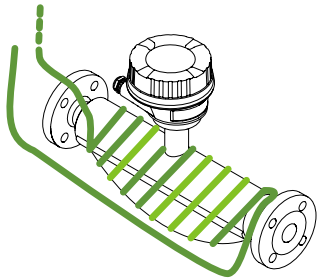
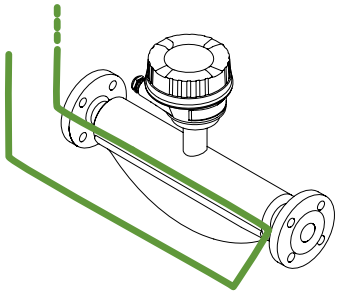
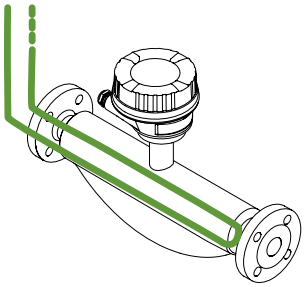
4.3 Unsuitable areas on the sensor to fit single-core heating cables

Heating cables installed in the areas marked red can affect the measuring performance.

Trace heating systems Single-core heating cable	**Installation set-up** No heating cables are permitted in the red zones. The blue line indicates a weld seam.	**Promass E, F, G, O, Q, X, LNGmass CNGmass LPGmass**	**A**	**I**	**C**	**H P S**
		✗	✗	✗	✗	✗
		✗	✗	✗	✗	✗
		✗	✗	✗	✗	✗

		✗	✗	✗	✗	✗
		✗	✗	✗	✗	✗

4.4 Recommended wiring layouts for single-core heating cables

Trace heating system Single-core heating cable	**Installation set-up**	**Promass E, F, G, L, O, Q, X, LNGmass CNGmass LPGmass**	**A**	**I**	**C**	**H P S**
		☒	☒	☒	☒	☒
		☑	☒	☒	☒	☑
		☑	☒	☒	☒	☑

5 Disposal

If required by the Directive 2012/19/EU on waste electrical and electronic equipment (WEEE), the product is marked with the depicted symbol in order to minimize the disposal of WEEE as unsorted municipal waste. Do not dispose of products bearing this marking as unsorted municipal waste. Instead, return them to Endress+Hauser for disposal under the applicable conditions.

Elektrische Begleitheizungssysteme

Promass 100, 200, 300, 500, 500-digital, LNGmass, CNGmass, LPGmass

Inhaltsverzeichnis

1 Verwendete Symbole

1.1 Symbole für Begleitheizungssysteme

Symbol	Bedeutung
	**Einadriges Heizkabel**
	**Paralleles Heizband**

1.2 Symbole für Informationstypen

Symbol	Bedeutung
	**Erlaubt** Abläufe, Prozesse oder Handlungen, die erlaubt sind.
	**Verboten** Abläufe, Prozesse oder Handlungen, die verboten sind.
	**Tipp** Kennzeichnet zusätzliche Informationen.
1., 2., 3...	Handlungsschritte

2 Zweck und Anwendungsbereich

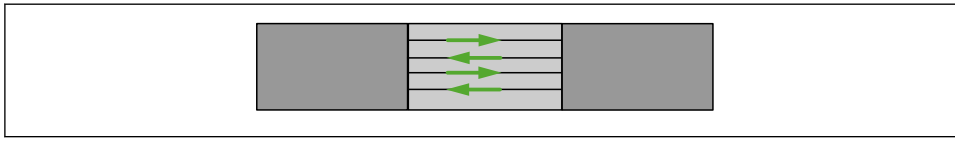
Wenn elektrische Begleitheizungssysteme nicht korrekt eingebaut sind, können die Messergebnisse von Promass Durchflussmessgeräten beeinflusst werden. Dieses Dokument gibt einen Überblick, wie elektrische Begleitheizungssysteme eingebaut werden sollen und welche Einschränkungen eingehalten werden müssen. Die Installationsbeschränkungen basieren auf dem Einfluss des elektromagnetischen Feldes, das durch die Begleitheizungssysteme erzeugt wird. Andere Einschränkungen, z.B. durch die max. zulässige Messumformertemperatur, bleiben weiterhin gültig.

3 Arten von elektrischen Begleitheizungssystemen

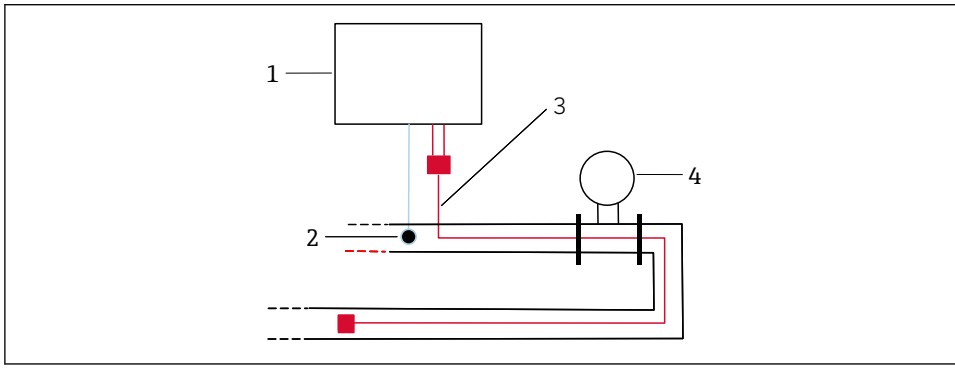
In diesem Dokument werden zwei verschiedene Arten von Begleitheizungssystemen beschrieben.

3.1 Paralleles Heizband

Dieser Kabeltyp enthält mehrere parallele Adern. Der Stromfluss in den Adern erfolgt abwechselnd. Es wird nur ein Ende mit einem Steuerungskasten verbunden.



4 *Beispiel für ein Paralleles Heizband. Die grünen Pfeile zeigen die Stromflussrichtung an.*

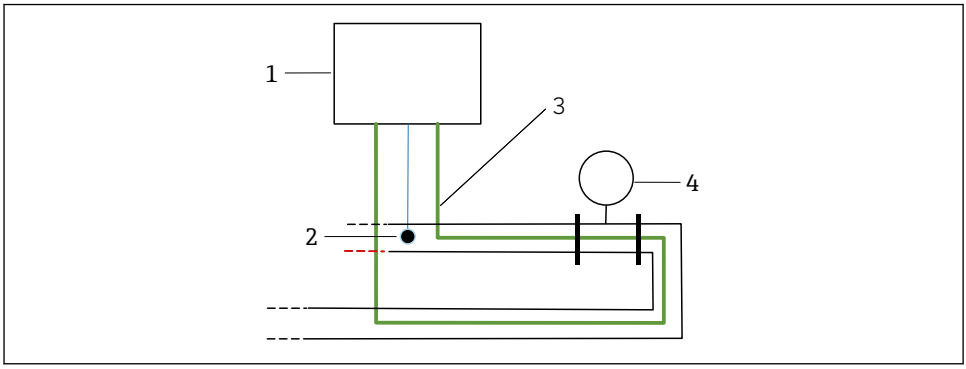


5 *Installationsbeispiel paralleles Heizband*

1 = Heizungssteuerungskasten
2 = Temperatursonde
3 = Begleitheizung
4 = Messgerät

3.2 Einadriges Heizkabel

Diese Art von Heizkabel besteht aus einem Kern. Der Stromfluss erfolgt nur in eine Richtung. Es werden beide Enden des Heizkabels am Steuerungskasten angeschlossen.

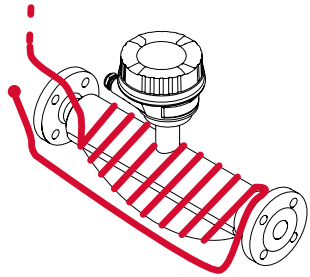
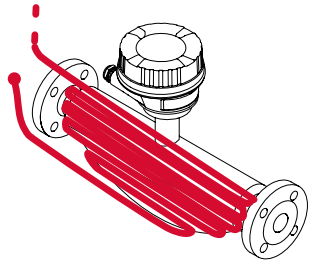
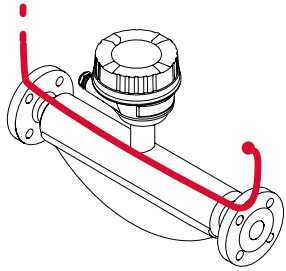


6 *Installationsbeispiel einadriges Heizkabel*

1 = Heizungssteuerungskasten
2 = Temperatursonde
3 = Begleitheizung
4 = Messgerät

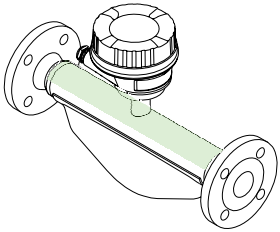
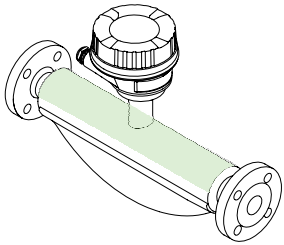
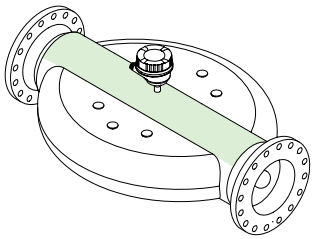
4 Übersicht zur Installation der Begleitheizungssysteme

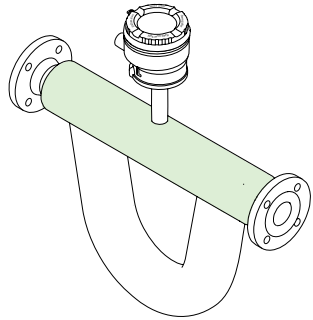
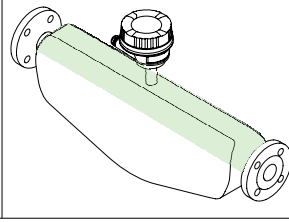
4.1 Empfohlene Verdrahtungslayouts für parallele Heizbänder

Begleitheizungs-system Paralleles Heizband bei bidirektionaler Flussrichtung	**Installationseinrichtung** Das parallele Heizband kann an beliebiger Stelle auf dem Sensorgehäuse platziert werden.	**Promass E, F, G, O, Q, X, LNGmass CNGmass LPGmass**	**A**	**I**	**C**	**H P S**
		✓	✓	✓	✓	✓
		✓	✓	✓	✓	✓
		✓	✓	✓	✓	✓

4.2 Empfohlene Bereiche am Messaufnehmer zum Anbringen einadriger Heizkabel

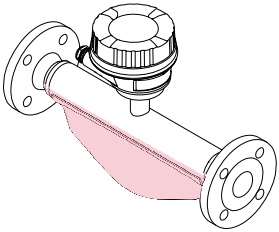
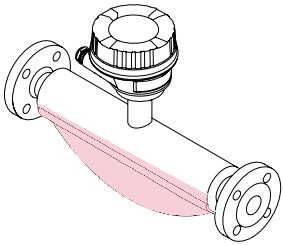
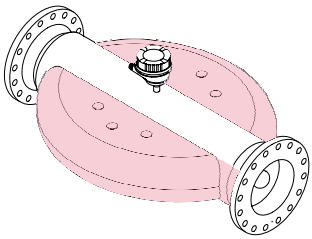
In grün markierten Bereichen ist die Wärmeübertragung vom Heizkabel zum Medium optimal.

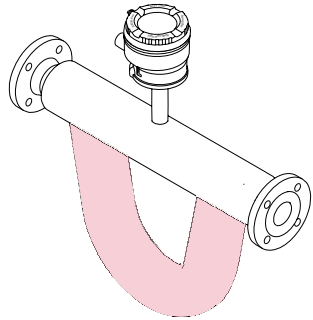
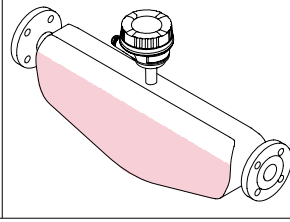
Begleitheizungs-system Einadriges Heizkabel	**Installationseinrichtung** Die Bereiche in denen Heizkabel installiert werden dürfen sind grün schattiert. Die blaue Linie zeigt eine Schweißnaht an.	**Promass** **E, F, G** **O, Q, X,** **LNGmass** **CNGmass** **LPGmass**	**A**	**I**	**C**	**H** **P** **S**
		✓	✗	✗	✗	✓
		✓	✗	✗	✗	✓
		✓	✗	✗	✗	✓

		✓	✗	✗	✗	✓
		✓	✗	✗	✗	✓

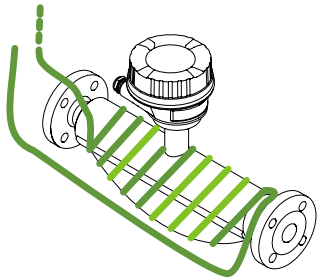
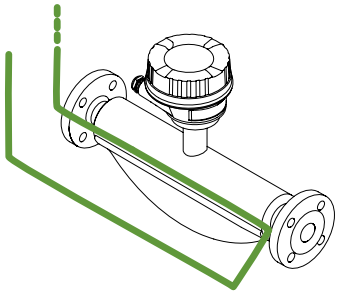
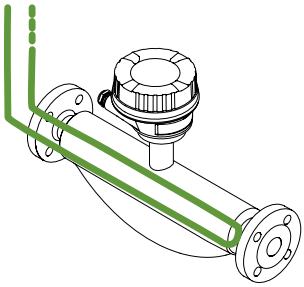
4.3 Nicht geeignete Bereiche am Messaufnehmer zum Anbringen einadriger Heizkabel

Heizkabel in den rot markierten Bereichen können zu einer Beeinflussung der Messleistung führen.

Begleitheizungs-systeme Einadriges Heizkabel	**Installationseinrichtung** In den roten Zonen ist kein Heizkabel erlaubt. Die blaue Linie zeigt eine Schweißnaht an.	**Promass** **E, F, G,** **O, Q, X,** **LNGmass** **CNGmass** **LPGmass**	**A**	**I**	**C**	**H** **P** **S**
		✗	✗	✗	✗	✗
		✗	✗	✗	✗	✗
		✗	✗	✗	✗	✗

		✗	✗	✗	✗	✗
		✗	✗	✗	✗	✗

4.4 Empfohlene Verdrahtungslayouts für einadrige Heizkabel

Begleitheizungs-system Einadriges Heizkabel	**Installationseinrichtung**	**Promass E, F, G, L, O, Q, X, LNGmass CNGmass LPGmass**	**A**	**I**	**C**	**H P S**
		☒	☒	☒	☒	☒
		☑	☒	☒	☒	☑
		☑	☒	☒	☒	☑

5 Entsorgung

Gemäß der Richtlinie 2012/19/EU über Elektro- und Elektronik-Altgeräte (WEEE) ist das Produkt mit dem abgebildeten Symbol gekennzeichnet, um die Entsorgung von WEEE als unsortierten Hausmüll zu minimieren. Gekennzeichnete Produkte nicht als unsortierter Hausmüll entsorgen, sondern zu den gültigen Bedingungen an Endress+Hauser zurückgeben.

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Endress+Hauser

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